Name: Date:
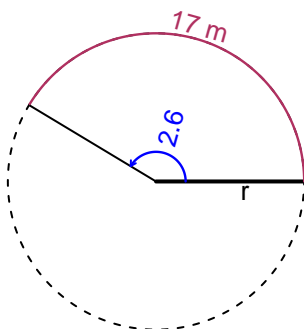
Trig Final (Practice v19)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.
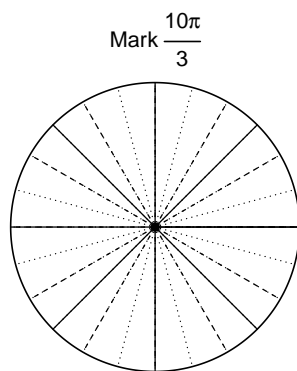
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The angle measure is 2.6 radians. The arc length is 17 meters. How long is the radius in meters?
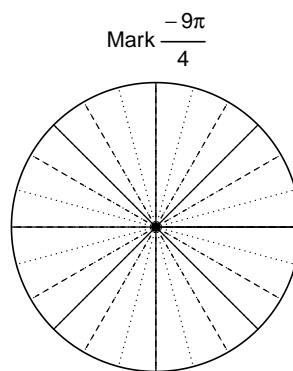

Question 2

Consider angles $\frac{10\pi}{3}$ and $\frac{-9\pi}{4}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{10\pi}{3}\right)$ and $\sin\left(\frac{-9\pi}{4}\right)$ by using a unit circle (provided separately).

Mark $\frac{10\pi}{3}$

Find cos(10π/3)

Mark $\frac{-9\pi}{4}$

Find sin(−9π/4)

Question 3

If $\cos(\theta) = \frac{-39}{89}$, and θ is in quadrant III, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 8.08 meters, a midline at $y = -2.71$ meters, and a frequency of 4.31 Hz. At $t = 0$, the mass is at the midline and moving down. Write an equation to model the height (y in meters) as a function of time (t in seconds).